Testimony on Restructuring the Electric Utility Industry

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Summary of Testimony by Raymond **D. Sauer on Restructuring the Electric Utility Industry**

This testimony is based on a comprehensive study **undertaken** by **myself and Professors Michael T.** Maloney **and** Robert **E. McCormick,** also **of Clemson** University, titled Customer Choice, Consumer Value: An Analysis of **Retail** Competition in **America's Electric** Industry. This study applies basic principles of supply and demand to a competitive **electricity market**. The current system of regulation yields **outcomes which differ** dramatically &om outcomes expected from **competition** and customer choice. As a **consequence,** introducing customer choice to markets for electricity will have **significant effects, which on balance will create** lasting improvements in public **welfare**. The principal findings of our study **are** as follows.

I) Full customer choice will yield reductions in the average price of **electricity** of **13-25%** in the short run and as much as 42% in **the** long run.

2) Payments for current purchases by a typical residential customer, which were **$69** per month in 1994, would decline by almost **$30** per month in the long run.

3) Competition **will create** net **welfare** gains of **$24** 3 billion per year for the U.S.

4) Reduaions in the **price of electricity will stimulate** economic growth and lead to lower prices. Had adjustments to **competitive pricing been fully implemented by 1995, GDP would have higher** by **$191** billion.

5) The financial viability of some, but by no means **all** utilities **will** affected by **competition The case for transition charges to compensate utilities for financial losses is does not have a sound economic basis. Should these charges be implemented, care must be taken to insure** that they do **not** impede the development ofvigorous competitive **markets in electricity.**

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Introduction

Thank you for inviting me to **speak** on the **costs** and **benefits** of electric utility restructuring. My name is Raymond **Sauer,** and I **am** an **associate professor** of economics at Clemson University In **1996,** I worked with Professors **Michael** Maloney **and** Robert **McCormick** of Clemson to produce a study titled Customer Choice. **Consumer Value:** An Analysis of Retail Competition in America's **Electric Industry**. The goal **of our study was to conduct a** comprehensive analysis of the consequences of introducing **customer** choice to **all** electricity consumers. **The** study applies basic principles **of supply** and demand to a competitive electricity market, The current system of regulation retards the **influence** of competitive **forces** to such an extent that the introduction of customer choice **will** have dramatic and lasting impacts on electricity consumers and **producers,** and the economy as **a** whole. In **a** nutshell, **the** study concludes that large, significant net benefits can be **realized** from introducing competition into the nation's market for **electricity.** The estimates which arc presented in this testimony on the impact of competition are **derived** from our 19% study.

Two features of **the** regulated marker for electricity provide the foundation for our prediction of the impact of customer choice **First, the** average price of electricity in the U.S. (6.9 **cents** per **kWh** in **1995),** is significantly **greater** than both short run avoidable **costs and** the long run average con of production. Second, at current **prices** there is **substantial** idle generation capacity These two features imply that removing the de **facto** ban on customer choice and entry of **new** firms **will** cause output to increase and price to fall. That price will decline in the short run

is now widely accepted in all quarters The important question is the magnitude of the price decline. Indeed the debate seems to have turned not to should we deregulate. but when.

Effects of Customer Choice on the Price of Electricity

Initially, competition and customer choice will yield significant price reductions because the existing system of regulation has created excess generating capacity at Current prices. This excess capacity cannot be used under current rules because firms am restricted from marketing the output from these facilities. Once this barrier is fully removed, companies with unused capacity will have a market for it, providing alternative sources of supply in service areas where competition is allowed. Since current prices in most service areas are higher than the avoidable costs of production. competition will cause price to decline.

Full utilization of conventional steam generation facilities, allowing for *standard* shutdowns for maintenance and continued safety and reliability reserves, would increase the quantity of electricity offered on the market by an estimated 25.5%. Given a price elasticity of -1, which is a representative estimate from the literature on electricity demand, the average price would fill by the same magnitude of 25.5%, or about 1 .8 cents per kWh. Price declines of *greater* amounts would obtain for less responsive demand.

In the long run, a competitive market drives price to the level of long run average costs, including the incremental cost per unit of additional capacity. Our benchmark for the long run average cost of delivered power using the best available current technology is 3.9 cents per kWh This figure is based on the widely reported costs of 3 cents per kWh for power generated by combined cycle gas turbines, pks current industry average costs of transmission, distribution, and

overhead of 0.9 cents per kWh. Current market prices in the wholesale market and further analysis of transmission and distribution costs at the utility level confirm our confidence in this price forecast A price of 3.9 cents per kWh represents a decline of 42.4% tiom the current average price of 6.9 cents per kWh. Price changes of this magnitude will have important consequences for the economy.

It is worth taking a moment to assess whether these forecasts are just a pipe dream, as some critics have suggested, or in fact realistic. First, note that states such as Kentucky, Idaho, and Wyoming paid an average price of 4.3 cents per kWh or less in 1995. Within the state of New Mexico, Southwestern Public Service Company sells power to its residential customer6 for at a price that is 44% cheaper than the price charged by its neighbor, El Paso Electric Company. There is significant scope for price reduction. Second, since we wrote our report more experience has been obtained in markets opened to competition. Municipal utilities now able to purchase wholesale power under competitive conditions under EPAct have achieved rate reductions on the order of our short term forecasts. Pilot programs in retail competition are offering rate reductions similar to our forecasts. In Illinois, residential customers in the pilot program have obtained rate reductions of 20% Market pricer offered by pilot program suppliers in New Hampshire range from 2.3 to 3.8 cents per kWh. Finally, other countries' experience with introducing competition in electricity markets suggests significant scope for price reductions.

On the experience in other countries, it is worth considering the following statement of Duke Power's Chairman, W. H. Grigg. Mr. Grigg recently stated, 'We've learned several lessons to date, and I'll touch on those now First - do not underestimate the power and effectiveness of competition. In our first overseas venture - in Argentina - our business case assumed that

competition would drive costs and rates down by 20%. In fact, they have come down by about SO%! It's a good idea to identify and measure all the competitive throats you can and then be alert for ones you haven't thought about.' This quote illustrates two important points with regard to restructuring the electric utility industry. First, significant price declines are not at all unrealistic; rather they are to be expected on the basis of both theory and evidence. Second. introducing market forces in the electric industry will yidd changes that cannot be projected based on past experience What can be said with some catainty about these typos of changes is that they will result from producers attempting to satisfy the demands of consumers newly endowed with freedom of choice. Consumer% and the economy as a whole, will benefit.

Savings Realized by Consumers

In 1994, the average electric bii paid by a residential customer was 568.86 per month. A price reduction of 25.5% would reduce payments for current purchases by S17.56 per month, or about $2 11 per year. The price decline of 42.4% translates into average savings of about $350 per year per customer. Aggregated across all residential customers, this represents an annual total of $35.8 billion, which would become income available for spending by consumers when competition delivers the full measure of price reductions This figure makes it clear that residential consumers are paying a very high price for the current system of regulation. When all electricity customers from all customer classes are included. savings on current purchases total approximately $83.1 billion.

Additional purchases will be encouraged by the decline in price however, and these add to the gains realized by consumers. Assuming a price elasticity of demand equal to -1, which is

representative of many estimates in the academic literature, we calculate a net gain in welfare of $24.3 billion. This gain is independent of issues regarding transfers of wealth between consumers and utilities, and represents the classic economist measure of the net welfare created by a change in policy. It is a static measure however, and does not address the issue of dynamic changes which will be set forth by introducing market forces into a previously regulated market. There is every presumption that the dynamic gains created due to the impact of unleashing market forces will add significantly to this total.

Some commentators argue that competition will allow large industrial customers to exert their influence and obtain rate reductions at the expense ofresidential customers. Indeed many analyses assume that, should industrial customers obtain rate reductions, prices will increase to residential customers in order to maintain the same revenue flow to utilities. These forecasts represent a fundamental misunderstanding of the impact of competition. It is true that regulatory decisions in the past have adjusted rates to one customer class to offset the projected effects on revenue of rate changes to another customer class. But true competition does not target a fixed revenue requirement; rather the target in competition is the avoidable costs of production, as opposed to the sunk or historical costs which form the basis for the revenue targets under regulation. Since prices are currently in excess of the avoidable costs of production for all customer classes, true competition will drive prices down for each class of customer, residential customers included In fact since the size and negotiating strength of many large industrial users has already brought them lower rates in many uses. the best hope for the medium-sized end residential consumer is competition It is important that restructuring abandon any semblance of revenue targets, for they are the at the heart of the current inefficiencies imposed by the current

system of regulation.

Effects On the Aggregate Economy

The drop in electricity prices will reduce the costs of business and provide a stimulus to economic growth. There are a number of studios which document that the use and availability of energy, and electricity prices in particular, have important stimulative effects on the economy. Energy costs play an important role in labor productivity and economic development. John Moroney of Texas A&M University documented that output per worker was positively related to energy use Specifically, Moroney found that labor productivity was significantly higher in economies that use energy more intensively. Further, numerous demand studies document that the industrial and manufacturing sectors make more intensive use of electricity when its price is lower.

Moroney's evidence squares with the widely held view that energy price increases during the 1973- 1980 period are responsible for the slower rates of *economic* growth realized in the last 25 years in the United States. Throughout this period the U.S. continued to accumulate capital, labor, and raw material resources at historical rates. Output has not kept pace however due to slower rates of growth in productivity Many economists trace the origins of the productivity slowdown to the energy price increases in the 1970s. That energy price increases have ceased to increase in recent years, with productivity growth recovering is evidence supporting this view

Dale Jorgensen of Harvard University examined production at the industry level, and found that lower electricity prices increase productivity. Specifically, Jorgensen found that "a decline in the price of electricity stimulates technical change' in 23 of the 35 industries studied.

This means that firms achieve gains in productivity by making greater use of innovative, energy intensive technologies when electricity prices fall. This point is well developed in the economic history literature by Nathan Rosenberg of Stanford University. Rosenberg emphasizes the unique role played by electric energy throughout the entire 20th century development of the American economy. As electricity became less expensive and more widely available, production processes were fundamentally altered in more efficient ways to take advantage of this inherently flexible and mobile source of energy. The American economy is more productive as a result.

Moroney's calculation of tbe effects of energy intensity on labor productivity can be used to estimate the increased output in the national economy due to lower electricity prices and more intensive use of electricity Moroney's estimates of the elasticity of output per worker with respect to energy intensity ranged from .15 to .19 for market economies. Our analysis suggests that the long run increase in ekctricity UK is 42.4 percent. Electric energy comprised 36.3 percmt of total energy use in 1995 in the United States. Hence our long-run estimate of usage translates to an increase in total energy use of 15.4 percent Using the midpoint of Moroney's elasticities, annual GDP is projected to be 2.6 percent higher in the long run. To gain some perspective, hed we reached long-nut competitive prices and use of electricity in 1995, GDP would have been higher by $191 billion. Each year that competition is delayed costs the American economy output of this magnitude.

Lower electricity prices will also yield a one time reduction in the inflation rate. Electricity is treated as an intermediate good whose influence on the price level stems from its effects on producer prices. The proper calculation of the effect of lower electricity prices on inflation is thus based on the Producer Price Ma. The portion of the PPI accounted for by

electric power is 5.37 percent. Full utilization of existing capacity and a 25.5% drop in price thus reduces the PPI by 1.4 percent Tha long run price decline of 42.4 percent yields a drop in the PPI of 2.3 percent. Competition in electricity is thus capable of wiping out one year's worth of inflation in producer prices.

Financial Effects of Competition on Electric Utilities and the Stranded Cost Issue

The price declines that we forecast imply lower profits for electric utilities. The effects will vary significantly from one utility to the next, depending on their abii to compete in an open market and the degree to which a utility's current prices exceed the avoidable costs of production. We expect short run competitive effect to generate net income declines of $5 billion annually with this number growing to as much as 538.5 billion annually in the long run. The latter figure is based on rhe forecast average price of 3.9 cents per kWh, and includes the revenues net of additional costs generated by increased production of electricity.

We estimate that 35-40 publicly traded utilities will suffer significant equity losses due to price declines from full retail competition. A similar number of low cost utilities that are prepared to compete will gain quity value as markets are opened to them and their sales increase There are about 20 firms in the industry with quity values less than or slightly higher than their book value. It is these firms that are the crux of the stranded cost problem. who will be unable to recoup their investment whm competition reduces their revenues.

It is our position that the issue of stranded cost recovery is primarily a legal and moral issue. There are some important economic dimensions to the issue however, First and foremost, if transition charges are imposed to recover stranded costs. it is important that they be imposed in

a manner which has minimal impact on the market price of electricity. Suppose that stranded cost recovery is introduced in the form of a unit charge designed to maintain the current stream of revenues for each utility. If this occurs, utility restructuring would yield no changes whatsoever in the market-place, since the price in each district would be unaffected by the introduction of customer choice If this is to be the outcome., we should all pack our bags and go home. To obtain the full measure of the benefits from competition, the market price of electricity must be allowed to fall. If it is determined that transition charges are to be used to transfer income to affected utilities, these charges should take the form of lump sum fees which leave the determination of the final price to the competitive market.

Second, estimation of the magnitude of stranded costs and the determination of the level and means of compensation are highly problematic. It is essential from the standpoint of economic efficiency that any system imposed to transfer income to affected utilities not dilute the incentive of utilities to lower their cost and compete in the marketplace. For example, transition revenues which leave a utility indiierent from retaining or losing customers create perverse incentives for utilities to drop existing customers and collect revenues from transition charges alone.

Finally. there is the long run policy question of whae the burden for losses imposed by unforseen events is properly placed Decisions on stranded cost recovery will have implications for future behavior by both investors and regulated firms. In competitive markets, unforseen changes impose losses on the owners of affected assets. Those who manage assets efficiently and with superior foresight are rewarded. Some utilities have been preparing for a competitive marketplace for years through planning and cost reduction Regulatory decisions which treat all

firms in a similar fashion, regardless of the level of efficiency with which they are managed, sends the wrong signal to regulated firms, that it doesn't matter if your firm is well managed and efficient. If stranded cost recovery sends this signal, we can expect fewer regulated firms to be well managed and efficient.

Technological advances and the development of the integrated transmission grid offer the prospect of lower prices and increased consumer welfare. These gains are placed in jeopardy by the claim of regulated utilities that they are due a revenue flow sufficient to amortize past investments, even though these investments may prove to be uneconomic in a competitive environment. In effect, utilities are claiming that a regulatory commission's act of approving or sanctioning their investments gives than a legal right to a continuing flow of revenue. It is our view that the public purpose served by utility regulation was to achieve economies offered by concentrating production in the hands of a single firm. Si the grant of exclusivity to a single firm entailed a grant of monopoly power, rate regulation was implemented. Regulation of electric rates was designed to offer a fair return: a return sufficient to attract capital, but lower than would be charged by an unregulated monopoly with exclusive territorial rights. In short, the idea in regulated monopoly is to combine competitive returns to capital along with competitive prices. It is not the idea of regulation to guarantee that all investments will be fully amortized in all future states of the world.

Rate regulation cannot in principle, and should not as a practical matter of policy. guarantee that all investments be amortized by future revenue flows. The fate of regulated railroads in the 20th century, who faced an obligation to serve similar to that of electric utilities is evidence of this. Technological developments in transportation rendered railroad service obsolete

in many markets, and some railroad firms were forced into bankruptcy. Their investments, which may have been efficient ex ante, turned out to be non-profitable. Although a combination of rate changes plus government subsidies could have allowed railroad investors to fully recoup their investments, this policy was not adopted.

Such a policy should not be adopted now either. There are substantial net gains to the economy that can be realized by introducing retail competition and customer choice. Stranded cost recovery threatens to diminish those gains. It is therefore my view that the proper policy is to deny stranded cost recovery, to let an unfettered market-place determine rates, and to allow those firms that are ready and able to compete in the competitive marketplace to obtain the full measure of their reward. This policy is consistmt with past precedent and government commitments, and establishes the efficient set of incentives for the future behavior of investors and regulated firms.